CHAPTER 3.14
OPERATION AND MAINTENANCE

CHAPTER 3.14 OPERATION AND MAINTENANCE

3.14-1. GENERAL. Operation and maintenance activities are required to maintain the effectiveness of completed landfill covers and liners. Repairs may be required to correct the effects of settlement, subsidence, or erosion. Gas extraction and leachate removal are required for some landfills. Parameters such as ground water quality, air quality, and underground gas migration are also monitored at some landfills. The construction contractor is often required to perform operation and maintenance on landfills for a specified period of time (typically one year) after construction. The construction contractor may also be required to write an operation and maintenance manual during the year in which he operates the landfill. In other cases, the operation and maintenance manual is written by the designer. This chapter discusses the QA Representative's responsibilities if the construction contractor is required to perform operation and maintenance for a specified period of time following construction.

Operation and Maintenance Submittals. The contractor should provide operation and maintenance submittals as required by the specifications. The following is a list of typical submittal requirements.

(1) Operation and Maintenance Manual. The manual may include one or more of the following:

- Air sampling and analysis plan;
- Ground water sampling and analysis plan; and
- Operation and maintenance procedures for the landfill cover, sumps, leachate treatment facility, gas extraction system, and gas treatment facility.

(2) Monthly Inspection and Operation Report.

(3) Monthly Water Treatment Plant Operation Report.

(4) Monthly Gas Treatment Plant Operation Report.

(5) Air, water, and leachate sampling reports.

(6) Notification of maintenance activities.

(7) Maintenance completion reports.

3.14-2. EXECUTION.

a. Ground Water.

(1) Up gradient and down gradient monitoring wells should be sampled after closure at the specified frequencies. Samples are typically collected once every one to three months during the first year after construction.

(2) Verify that before each round of sampling, the ground water elevation is determined for each well.

(3) Verify samples are collected in accordance with the sampling and analysis plan.

(4) Review the ground water sampling data for significant changes in contaminant concentrations.

b. Landfill Leachate.

(1) Ensure that leachate levels within sumps are monitored at the specified frequency.

(2) Verify that Leachate is collected from sumps to maintain a head of less than 0.3 meters (12 inches) on the liner.

(3) Treatment and disposal criteria are site specific. Review the plans and specifications to determine what these criteria are.

c. Landfill Gas.

(1) Verify the contractor periodically inspects the surface of the landfill cover for bulges which may be an indication that gas is collecting beneath the geomembrane.

(2) The contractor should also monitor landfill gas concentrations at compliance points every two to four weeks for the first year after construction. Verify gas concentrations are at acceptable levels.

(3) Compliance points may include gas monitoring probes, boundary monitoring stations, well heads for passive systems, or flares for active systems.

(4) Verify samples are collected in accordance with the sampling and analysis plan.

d. Settlement.

(1) Verify the contractor is performing periodic inspections of the landfill surface. The landfill cover should typically be inspected monthly for signs of settlement and slope stability problems.

(2) Require additional select fill and top soil be placed in areas where minor settlement has occurred. These areas should then be reseeded.

(3) If a large depression develops which results in reverse slopes, repairs to the low permeability layer and drainage layer may be required to reestablish the correct slope.

e. Vegetative Cover. Verify that the contractor is maintaining the effectiveness of the final cover by performing the following tasks:

(1) Maintaining temporary erosion control structures until the vegetative cover is established and repairing erosion damage;

(2) Reseeding areas with poor vegetative cover;

(3) Mowing as appropriate for local conditions after the vegetative cover has been established; and

(4) Keeping the surface of the landfill free of burrowing animals and large vegetation.

f. Runoff Controls. Verify the contractor is inspecting the following runoff control features.

(1) Drainage terraces, ditches, and drop structures should be inspected monthly by the contractor to ensure that erosion or other problems are not present.

(2) Detention ponds should be inspected monthly to ensure there is sufficient storage available for runoff and the outlet works are operating properly.

(3) Outlets to the cover subdrainage system should also be inspected monthly and kept clean and free flowing.

g. Other Features. Other features such as fences and perimeter access roads should be maintained by the contractor during the one year maintenance period.

h. Maintenance Work.

(1) The contractor should provide notification in writing in advance of conducting any non-routine or major maintenance activities.

(2) A Government representative should be present during all major maintenance activities.

(3) A maintenance completion report should be submitted by the contractor when the work has been completed.

(4) The ultimate user/O&M representative should be involved during the one year contractor O&M period. This will aid in a smooth transition and ultimate acceptance of the completed project.